



GOVERNMENT OF INDIA
MINISTRY OF COMMERCE

**REPORT OF THE
INDIAN TARIFF BOARD
ON THE
MOTOR VEHICLE BATTERY INDUSTRY**

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REPORT ON THE MOTOR VEHICLE BATTERY INDUSTRY

The Standard Batteries, Ltd., Bombay, in its letter No. 1701/46 (KGP. NAS), dated the 27th April 1946, addressed to the then Department of Commerce, Government of India, asked for Governmental assistance to the motor vehicle battery industry as follows :—

Application for protection and reference to the Board.

(i) reduction in the control price of lead and other materials required for battery manufacture ; (ii) remission of duty on raw materials and machinery ; (iii) increase of import duty on batteries and plates to 100 per cent *ad valorem* ; (iv) ban on the import of batteries fitted as original equipment of motor vehicles ; and (v) discouragement of the establishment of battery manufacturing plants in India by foreign companies. The firm also asked that protection should be effective for 10 years, in the first instance. Similar applications for protection were made by the Estrela Batteries, Ltd., Bombay, in its letter dated the 19th May 1946, and the Amco Ltd., Bombay, in its letter dated the 29th May 1946. In a letter dated the 11th November 1946, the Maharatta Chamber of Commerce and Industries, Poona, also supported in general terms the case for protecting the motor vehicle battery industry. The application was at first turned down by Government on the ground that one of the principal component parts required in the building up of storage batteries, viz., the container, was not being manufactured in India. But, on receiving an assurance from the principal applicant, namely, the Standard Batteries, Ltd., Bombay, that the plant and machinery required for the manufacture of containers had already been ordered from abroad and were on their way to India, Government reconsidered the application, and under the then Department of Commerce Resolution No. 218-T(55)/45, dated the 15th March 1947, read with paragraphs 2 and 7 of its Resolution No. 218-T(55)/45, dated the 3rd November 1945, and paragraph 4 of the Resolution bearing the same number, dated the 16th February 1946, remitted to the Tariff Board for investigation, the claim of the industry for assistance or protection.

2 Under the terms of reference contained in the Government of India Resolution dated the 3rd November 1945, the Board has to satisfy itself—

Terms of reference.

- (i) that the industry is established and conducted on sound business lines ;
- (ii) (a) that, having regard to the natural or economic advantages enjoyed by the industry and its actual or probable costs, it is likely within a reasonable time to develop sufficiently to be able to carry on successfully without protection or State assistance ; or
- (b) that it is an industry to which it is desirable in the national interest to grant protection or assistance and that the probable cost of such protection or assistance to the community is not excessive.

Where a claim for protection or assistance is found to be established, that is, if condition (i) and condition (ii) (a) or (b) are satisfied, the Board may recommend—

- (i) whether, at what rate and in respect of what articles, or class or description of articles, a protective duty should be imposed ;
- (ii) what additional or alternative measures should be taken to protect or assist the industry ; and
- (iii) for what period, not exceeding three years, the tariff or other measures recommended should remain in force.

In making its recommendations the Board has to give due weight to the interests of the consumer in the light of the prevailing conditions and also consider how the recommendations affect industries using the articles in respect of which protection is to be granted.

3. (a) On the 17th March 1947, the Board issued a press communiqué inviting all firms, associations and persons interested in the industry, who desired their views to be considered by the Board, to submit their representations. Detailed questionnaires were issued to all known producers, importers, and consumers as well as to the Provincial Directors of Industries, all Chambers of Commerce and recognised Trade Associations. A list of those to whom questionnaires were issued and who submitted their replies is given in Appendix I. Mr. C. C. Desai, then a Member of the Board, visited the Amco factory at Bangalore on the 18th June 1947. The same factory was visited by Mr. P. V. R. Rao, Cost Accounts Officer attached to the Board, from the 7th to the 10th July 1947 and by Mr. S. D. Sunawala, who was then a Technical Adviser to the Board, on the 12th July 1947. The Standard Batteries' factory in Bombay was visited by Dr. Rama Varma, Assistant Secretary to the Board, together with the Technical Adviser and the Cost Accounts Officer, on the 27th June 1947.

(b) The hearing of oral evidence in this case, originally fixed for the 12th and the 13th August 1947, had to be postponed due to the resignation from the Board of Mr. C. C. Desai, President (Mr. Desai had been appointed President with effect from the 1st July 1947) and Dr. Nazir Ahmad, Member, of the Board, on their transfer elsewhere. When the reconstituted Tariff Board, with Mr. G. L. Mehta as President, Dr. H. L. Dey and Dr. B. V. Narayanaswamy Naidu as Members and Mr. M. Ahmadullah as Secretary, met in Bombay in November 1947, the inquiry was taken up. The President, Members and Secretary of the Board, and Mr. R. N. Kapur, Technical Adviser, visited the Standard Batteries' factory on the 27th November 1947. The President and Mr. Kapur also visited the Chloride Electrical Storage factory, and the Indian Batteries Manufacturing Co.'s factory, both at Calcutta, on the 2nd and the 4th December 1947 respectively. Mr. Kapur visited the Bharat Battery Manufacturing Company's factory at Calcutta on the 2nd December 1947. Standard and Amco batteries were tested by Mr. P. V. R. Rao with the help of the then Technical Adviser, Mr. S. D. Sunawala, and the present Technical Adviser, Mr. R. N. Kapur. A public inquiry was held and representatives of pro-

ducers, consumers and importers were examined in Bombay on the 10th and the 11th December 1947. A list of the persons who attended the inquiry and were examined is given in Appendix II.

4. (a) Attempts to manufacture batteries for motor vehicles were first made in 1931 by the Tropical Accumulators, Calcutta, then an unregistered firm. The firm was registered in 1936 and has continued to manufacture batteries since then. During the years from 1933 to 1939 a number of other factories, namely, Bbarat Battery Manufacturing Company, Electro Chemical Industry, Indian Battery Manufacturing Company, Eastern Accumulator Company and Mozumdar Battery Co., sprang up in Calcutta. The concentration of the industry in the prewar period in Calcutta was rather remarkable. Outside Calcutta there was at that time only one firm in Bombay which started manufacturing battery plates in 1934 and later removed its factory to Bangalore in 1937. This company originally named as the General Accumulators Manufacturing Co., is now known as Amco Ltd. All these units, however, produced batteries on a small scale in the prewar period and their total output was quite inadequate to meet the indigenous demand. Consequently, the country's requirements were largely met from imports, mainly from the U.K. and the U.S.A. But the outbreak of war caused a heavy reduction in imports of motor vehicle batteries, and the Indian industry was therefore called upon to meet practically the entire demand of the Defence Services. Several new units came into existence while some of the old units put up additional plants. Government assisted this industry by granting import licences for battery-making plant and by securing a steady flow of raw materials required for the manufacture of batteries. During the war period, however, it was difficult to import containers from abroad, and there was only one factory, viz., Messrs. A. K. Sarkar & Co. (now National Rubber Manufacturers, Ltd.), which had just started the production of containers on a small scale. In the circumstances, the indigenous industry was mostly engaged in the making of battery plates for replacement purposes and to some extent in rebuilding batteries by using salvaged containers. The more important firms which came into existence during this period are : (1) Estrela Batteries, Ltd., Bombay (1939), (2) Standard Batteries Ltd., Bombay (1943), and (3) Chloride Electrical Storage Co. (India) Ltd., Calcutta (1945). The last-named firm is a subsidiary of a British company of the same name which has been established in the U.K. for over 50 years. Its Indian factory was put up during wartime at the instance of the Defence Services for meeting the requirements of batteries in the eastern theatres of war. And it was granted War Project Co-ordination and Administrative Priority, No. 2, Project M-20, which considerably helped the firm in obtaining building materials and plant. But it could not actually start manufacturing batteries until after hostilities had ceased. At the present time it is the largest battery-manufacturing concern in India, with an up-to-date plant including machinery for manufacturing containers. Standard Batteries Ltd., Bombay, has also recently installed a modern plant for producing complete batteries including containers. Amco and a few other units are also reported to have definite plans for expanding and modernizing their plants.

(b) Another new plant is now being put up in Bombay by General Motors (India) Ltd. Licence to import battery manufacturing machinery had been granted to General Motors in March 1946 and the firm had cabled to the U.S.A. for various items of machinery to be shipped to them as soon as possible. By the middle of July 1947, the entire machinery except one small item had already been shipped to this country and most of the machinery had arrived while the balance was in transit. In the meantime, representations were submitted to Government by a number of Indian battery manufacturers urging that the General Motors being a foreign company should not be allowed to establish a battery-manufacturing plant in India and that the licence already granted to it should be revoked. The Indian manufacturers argued that General Motors, with its established reputation and strong and extensive selling organisation, would offer formidable competition and might altogether crush the infant indigenous industry. This representation was also supported by the Indian Merchants' Chamber, Bombay, in its letter dated the 16th October 1946. The matter was referred to the Tariff Board in the then Commerce Department letter No. 210-T/33(47), dated the 23rd May 1947. The Board made a preliminary inquiry, and in view of the conditions then existing, expressed the opinion that the licence already granted to General Motors (India) Ltd. should not be withdrawn.

(c) During wartime the following battery manufacturers were placed under the statutory control of the then Supply Department :—

- (1) Amco Limited, Bombay ;
- (2) Bharat Battery Manufacturing Company, Calcutta ;
- (3) Standard Batteries Limited, Bombay ; and
- (4) Estrela Batteries Limited, Bombay.

Control over production and distribution came into operation in September 1943 and was terminated by the end of 1945. Price Control was first introduced under the Motor Vehicle Spare Parts Control Order, 1944, and continued later on under the Essential Supplies (Temporary Powers) Act, 1946. This price control was lifted on the 1st March, 1948.

5. (a) Batteries for motor vehicles are built up of the following components and raw materials. —

- (i) Containers with covers and vent plugs.
- (ii) Positive and negative plates.
- (iii) Wood or ebonite separators.
- (iv) Terminals and connectors.

The main raw materials required for the manufacture of batteries are (i) rubber or asbestos and certain chemicals, or plastics, for making containers, covers and vent plugs, (ii) lead and antimony for making grids of the plates and for terminals and connectors, (iii) lead oxides—red lead and litharge—for pasting the grids for plates, (iv) Orford cedar wood or Douglas fir wood separators (ebonite or synthetically made rubber separators can also be used), (v) sulphuric acid for forming the plates, and (vi) sealing compound made from bitumen.

(b) Before the war, containers, covers and vent plugs were being imported from the U.S.A. During wartime their importation was severely restricted and attempts were made to establish the manufacture of containers in this country. A. K. Sarkar Ltd. (now National Rubber Manufacturers, Ltd.), Calcutta, started the manufacture of containers in its Rubber Works, but its capacity was far short of the requirements of the Indian battery manufacturers. This firm has now a capacity for producing 20,000 containers a year and proposes to expand it in the near future to 50,000 a year. After the cessation of hostilities, the more important battery manufacturers made arrangements to import the necessary machinery for the manufacture of containers to meet their own requirements. At the present time, Chloride Electrical Storage Co. (India) Ltd., Calcutta, Standard Batteries Ltd., Bombay, and Bharat Battery Manufacturing Co., Calcutta, have each set up a complete unit for the manufacture of containers. Firestone Tyre and Rubber Company is also installing a container plant in Bombay and expects to go into production in March 1948. This company's estimated production would be 100,000 containers in 1948 and 200,000 containers in 1949. The production of the five existing container plants, *viz.*, Chloride, National Rubber Manufacturers, Standard, Bharat and Firestone, is expected to be as follows :—

Name.	1948	1949
Chloride	84,000	84,000
National	20,000	20,000
Standard	60,000	60,000
Bharats	27,600	30,000
Firestone	100,000	200,000
Total	291,600	394,000

When the National Rubber Manufacturers carry out their plan of expanding the container capacity, the production of battery containers in the country would of course be larger. While all the other firms in India are using vulcanized rubber for manufacturing containers, Chlorides are using asbestos composition for the purpose. We were informed that the manufacture of containers from asbestos composition is a quicker process than their manufacture from vulcanized rubber, so much so that the output per unit of time in the former case is 4 to 6 times as high as in the latter case. Asbestos fibres were formerly imported from South Africa, which is reported to be the only source of asbestos of suitable quality ; but all imports from there are now banned in this country. We were, however, told that asbestos is available in Mysore and Saraikella. No attempt has so far been made to process indigenous asbestos. We recommend that the Council of Scientific and Industrial Research should be asked to take steps to have it processed for the manufacture of containers.

(c) As regards separators, these are at present being mostly imported from Canada or the U.S.A. Suitable types of wood similar in its physical and chemical characteristics to either Orford Cedar wood or Douglas fir-wood have not so far been available in this country. We were, however, informed that experiments are being conducted by Chloride Electrical Storage Co. to test the suitability of the Indian wood ' Haldn ' for the manufacture of separators. Similar experiments with certain types of

wood are also being carried out at the Dehra Dun Forest Research Institute. An extract from Utilisation (New Series), Indian Forest Bulletin No. 134—1944, 'Indian Woods for Battery Separators,' is given in Appendix III. We recommend that more extensive experiments with suitable varieties of wood should be undertaken at the Dehra Dun Forest Research Institute in collaboration with the principal battery manufacturers in the country.

(d) Of the remaining raw materials, pig lead is imported from Burma or Australia, and sulphuric acid is available in India, while antimony is partly imported from China, and partly produced in the country. Lead oxides are also manufactured in the country from imported lead. A few chemicals, such as, vandyke crystals and barium hydrate, which are used in small quantities by certain firms, are also imported.

6. (a) A battery for motor vehicles consists of a group of positive and negative plates enclosed in a container.
Process of manufacture. Plates are formed from grids cast out of antimonial lead and pasted over with oxides of lead mixed with sulphuric acid and certain other chemicals. They are formed positive or negative through a chemical change effected by passing an electric current of required intensity through the plates while they are held in a sulphuric acid bath. After this process, the plates are washed and dried. They are then assembled into negative and positive groups.

(b) A group of negative plates is then interlocked with a group of positive plates, the plates themselves being kept separate from one another by thin sheets of special wood or ebonite. These sheets are known as separators and they serve as insulators between the two kinds of plates. The interlocked groups are then placed in the container.

(c) Containers are made of vulcanized rubber, asbestos composition or plastics and have vented covers of the same material. Both containers and covers are usually made in hydraulic pressing machines.

(d) Connectors are then fitted to the assembled plates already placed in the container. The container cover is then put on and the unit is sealed with a sealing compound. Vents have stoppers made of the same material or of porcelain.

The battery is then ready for despatch.

7. The Annual Statement of the Sea-Borne Trade records the total value of all the accumulators (including parts of all types) imported into the country.
Imports. The item 'accumulators' includes, besides motor vehicle batteries, batteries for train lighting, radio sets, and tractors. Since motor vehicle batteries are classified together with the other types of accumulators in one single group, it is not possible to ascertain from the trade statistics the value of these batteries imported in to the country. Mr. L. Hansen, representative of Chloride Electrical Storage Co. Ltd., Calcutta, however, furnished us with the following figures of imports in the prewar period :—

Number of motor vehicle batteries imported.

1937	..	..	..	..	..	57,317
1938	..	..	..	..	..	50,797
1939	..	..	..	..	..	53,771

During those years the principal sources of imports were the U.S.A. and the U.K., as indicated by the following figures :—

Imports from the U.S.A.

1937	..	..	..	..	..	37,000
1938	..	..	..	..	..	25,000
1939	..	..	..	..	..	22,500

Imports of 'Exide' batteries from the U.K.

1937	..	..	..	..	..	11,100
1938	..	..	..	..	..	14,400
1939	..	..	..	..	..	17,000

Mr. Hansen further stated that batteries were also imported during the prewar period, from Japan, Czechoslovakia, Canada and Germany. During the period January—June 1947, import licences were issued in respect of about 37,000 batteries, roughly two-thirds from the U.K. and the rest from the U.S.A., Australia and New Zealand. As a result of the representation made by the battery manufacturers in the country, the import quota for the period July—December 1947, was restricted to 10 per cent of the prewar imports. We have, however, no information as to whether the full quota for which licences were issued, has actually been imported. According to a Public Notice dated the 12th December 1947 issued by the Government of India in the Ministry of Commerce, the issue of import licences for motor vehicle batteries is at present subject to an overall monetary ceiling. It is desirable that accurate statistics of imports of motor vehicle batteries should be available in future and we recommend that the value and quantity of such batteries should be separately recorded in the Sea-Borne Trade Account.

8. It is not possible to give any precise estimate of the demand for motor vehicle batteries in the country. The former Department of Industry and Supply, in its memorandum dated 4th June 1947 estimated the demand to be about 200,000 batteries per annum. General Motors, in its reply to the Board's questionnaire, estimates the total demand to be about 180,000 batteries for replacement purposes and 30,000 batteries for original equipment in new vehicles. About 25 or 30 per cent may, however, be taken to have been used in the areas which now constitute Pakistan. But, since these estimates were made, there has been a considerable increase in the number of cars and other motor vehicles on the road leading to an increase in the demand for batteries. The matter was discussed with the representatives of the industry at the public inquiry, and it was agreed that the present demand in the country might roughly be put at 200,000 batteries per annum for replacement purposes. To this must be added another 40,000 batteries which are fitted as original equipment to new motor vehicles, whether imported or assembled in India. Another 5,000 batteries, 6 volt 15 plate, would also be required for use in radio sets. The total demand for motor vehicle batteries in the next two or three years may, therefore, be estimated to be about 250,000 batteries a year.

9. (a) Twenty-four known producers of motor vehicle batteries were requested by the Board to state their rated capacity and actual production. Of these, only ten sent their replies. It may be presumed that the remaining fourteen pro-

ducers, who did not send any reply to the Board's questionnaire, produced batteries only intermittently as and when it was profitable to do so and are not on regular planned production. The actual production of batteries in 1947 was about 90,000. As regards rated capacity, the question was discussed with the representatives of the industry present at the public inquiry, and it was agreed that the capacity would approximately be as follows :—

		Rated capacity.	
		1948	1949
(1) Amco Ltd., Bangalore	.. .. .	30,000	60,000
(2) Bharat Battery Manufacturing Co., Calcutta	.. .. .	30,000	30,000
(3) Chloride Electrical Storage Co., Calcutta	.. .. .	84,000	84,000
(4) Estrela Batteries, Bombay	.. .. .	3,600	3,600
(5) Indian Battery Manufacturing Co., Calcutta	.. .. .	23,700	23,700
(6) Standard Batteries, Ltd., Bombay	.. .. .	45,000	60,000
(7) Tropical Accumulators Ltd., Calcutta	.. .. .	6,000	6,000
(8) General Motors	.. .. .	21,000	60,000
(9) Others	.. .. .	25,000	25,000
Total		268,300	352,300

If we compare the figures of rated capacity with that of the estimated demand (250,000 batteries a year) given in paragraph 8, it would appear that the country would be self-sufficient in respect of motor vehicle batteries in a year or two. The rated capacity given above is based on the factories working on single shift in their main departments. Should the demand go above the present estimate, the rated capacity can also be stepped up to meet the larger demand by working the factories on double shift.

(b) In regard to the estimated rated capacity given above, it must be mentioned that the estimate is based on the components and raw materials being made available more promptly and adequately than has been the case in the past. In this connection, Chlorides complained that there had been recently a few cases of unusual delay in the grant of import licences to them in respect of comparatively small quantities of essential raw materials like coal-tar pitch, disintegrated asbestos fibre, Vandyke crystals and barium hydrate, the total amount involved being only Rs. 56,195. Though the matter was known to be urgent, licences were not granted until some three months had elapsed from the date of application. They stated that this delay in the grant of licences led to two of the departments of their factories being closed for a few months. We were also informed by Standard Batteries that there had been an abnormal delay in their receiving a consignment of lead oxide from Calcutta due to the non-availability of railway wagons. It was emphasized by the representatives of the manufacturers that the absence of a steady and adequate flow of raw materials and sometimes the non-availability of containers in sufficient numbers were the main factors that had resulted in the wide gap between their rated capacity and actual production in the past. The expected expansion of production from 90,000 in 1947 to 268,300 batteries in 1948 and 352,300 batteries in 1949 can only materialize on the basis of a steady and adequate supply of the raw materials. In order that production up to the full rated capacity can be attained, thereby saving a sizeable amount of foreign exchange by cutting down the import of batteries, we

recommend that Government should give all facilities to the manufacturers of motor vehicle batteries for the procurement of the raw materials, imported as well as indigenous.

10. (a) In their written memoranda, the consumers' representatives expressed their opinion on the quality of the indigenous motor vehicle batteries as compared with the imported ones. Some of them stated that there was no difference in the quality of the two, while a few others said that the indigenous batteries had a shorter life than the imported ones, mainly on account of the inferior separators and containers used by the Indian manufacturers. A third group of consumers' representatives stated that, though in the past the indigenous batteries were inferior in quality, they had considerably improved of late and that they were now in every respect equal to the imported ones. We also examined some of the consumers' representatives during the public inquiry. After carefully sifting the evidence on the subject, we have come to the conclusion that the indigenous motor vehicle batteries are satisfactory in quality and that, given a steady supply of raw materials of the right quality, the Indian manufacturers can turn out batteries as good as the imported article. It is probable that, due to the established reputation of the well-known brands of imported batteries, they command a certain premium in the market as against the indigenous ones. It is also probably true that the dealers have some partiality for the imported batteries because of their old and profitable trade connections with the importers. Another advantage enjoyed by the imported batteries over the indigenous ones would be that the users of motor vehicles might continue to have for some time at least, a certain degree of preference for the imported brands of batteries, which come fitted as the original equipment of imported or assembled motor vehicles. The enjoyment of such incidental advantages by the imported batteries acts as a definite handicap to the indigenous manufacturers in selling their batteries. This prejudice may not be so noticeable in the case of 'Exide' batteries manufactured in India by Chloride Electrical Storage Company, because, even though they are produced in this country they are not labelled 'Made in India', and often pass off as the 'Exide' batteries manufactured and sold by the principal British Company of the same name. But the majority of the Indian manufacturers, who are new in the field and who have yet to establish their reputation in the market, do undoubtedly suffer from the prejudice. And the consensus of opinion was that this prejudice might be assessed at 20 per cent of the retail selling price of batteries, so that the consumers, as a rule, would not buy an indigenous battery unless it were offered at 20 per cent less than the retail selling price of an imported battery of a comparable type. We have accepted this assessment of the degree of prejudice and have made due allowance for it in determining the measure of protection.

(b) In this connection, we may refer to the practice of guarantee given by the battery manufacturers. In the case of the imported batteries, the pre-war guarantee was one year or 12,000 miles, whereas the present guarantee is 3 months or 3,000 miles. In the case of the indigenous batteries, the present guarantee is 12 months for motor car batteries and 9 months for truck batteries. It was, however, explained by the importers' representatives that, though the guarantee of life given by them in respect of

their batteries was for 3 months, instead of 12 months as before the war, there had been actually no decrease in the life of their batteries and that if any defect developed in a battery within a year, it was replaced. While the representatives of consumers contended that this reduction of the guarantee period for the imported batteries was due to an actual lowering of the quality, the reporters explained that the reduction of the guarantee from one year to 3 months was intended only to avoid unnecessary trade risks.

11. As already stated in paragraph 4(i), Chloride Electrical Storage Company (India) Ltd., which is the biggest unit of the industry in this country, is a subsidiary of a long established Company of the same name in the U.K., which has similar subsidiaries in Australia and New Zealand as well. Its motor vehicle batteries, whether produced in the U.K. or Australia or New Zealand or India, bear the well-known trade brand 'Exide'. It was complained that the 'Exide' batteries made in India are not labelled 'Made in India', whereby the consumers may be led to think that they were made in the U.K. The representatives of the Company replied that the 'Exide' made in India was exactly of the same quality as the 'Exide' made in Australia or in the U.K. or in New Zealand, but admitted the reasonableness of the demand that their batteries made in India should be labelled 'Made in India', and agreed to comply with the demand. We were also informed that General Motors (India) Ltd., proposes to manufacture batteries in India from March 1948 and that it would brand its batteries as GMI and not as Delco which is the trade brand for its batteries made in the U.S.A. We recommend that all battery manufacturers in this country should be required to label their batteries as 'Made in India'.

12. At the present time there are no standard specifications for motor vehicle batteries. While the British standard specifications are insisted upon by Government for the batteries used for train lighting and stationary purposes, no specifications are enforced for motor vehicle batteries. In the interest of sound development of the industry, we consider it necessary that Indian standard specifications for indigenous motor vehicle batteries should be evolved at an early date. The battery manufacturers also recognized the need for such specifications. We recommend that the industry should take immediate steps to evolve and adopt, in consultation with the Indian Standards Institution, suitable standard specifications for motor vehicle batteries including containers.

13. (A) At the present time, the biggest producer of motor vehicle batteries in India is Chloride Electrical Storage, Calcutta. But, at the time of cost investigation, the Company had been in production of batteries spasmodically for just over a year and did not maintain regular cost data. Moreover, it was not interested in protection. The Board, therefore, decided to cost two Indian-owned and Indian-managed factories and selected Standard Batteries, Bombay, and Ameco Batteries, Bangalore, for the purpose of costing. It was found that the Standard Batteries factory

was the larger, more developed and more efficient of the two factories. The cost data obtained from this factory were adopted by us as the basis for estimating the fair selling price of indigenous motor vehicle batteries. The factory produces several types ranging from 6 volt 9 plate to 12 volt 21 plate batteries. About 75 per cent of the total output, however, was represented by 6 volt 15 plate and 6 volt 17 plate batteries. These two were, therefore, selected as the most representative types of batteries for the purpose of costing. As the representatives of Standard Batteries Ltd., desired that its cost data should be kept confidential, we are submitting the cost data to Government as a separate enclosure to the report.

(B) In costing Standard Batteries we came up against a serious difficulty in that, during the last two years and a half, the firm's method of production has passed through important changes as indicated below :—

- (i) From 1st June 1945 to 31st December 1946 the entire process was carried out by manual labour and the drying was done in the open atmosphere.
- (ii) From 1st January 1947 to 30th June 1947, the casting of the grids and their dressing and punching was done on semi-automatic machines. The pastes were also mixed by machines.
- (iii) From 1st July 1947 onwards, an entirely new automatic machine has been installed for casting and dressing the grids, while mixing the paste and pasting the grids is also carried out by machines ; the drying is done in electrically heated chambers with temperature controls ; forming takes place on big tank formations ; and the assembling is done more efficiently than before with jigs and tools. Moreover, this Company has recently installed seven automatic presses for the manufacture of containers from a special rubber compound. The container plant, which is stated to have a theoretical capacity of producing 100,000 containers per annum, will be able to meet the Company's requirements of containers from 1948 onwards.

(C) Our Cost Accounts Officer examined the actual cost of production in two different periods, viz., (i) 1st June 1945 to 30th June 1946 and (ii) 1st July 1946 to 30th June 1947. While audited accounts were available for the first period, the accounts of the second period had not been audited at the time when the investigation was carried out. Further, the larger and more efficient battery-manufacturing plant and the automatic container plant having started production from July 1947 only, actual cost data for the latest method of production with automatic machines were not available when the cost was examined in July and August 1947. Consequently, while the estimates of cost of production for the first two periods were based upon actual cost data, the estimate of cost of production for the latest period was prepared partly on the basis of past data and partly in the light of discussion between the management and our Cost Accounts Officer and Technical Adviser. As regards the quantities of materials allowed in the estimate of future costs, our Cost Accounts Officer was mainly guided by the records of past production. As for the prices of the raw materials, the latest market quotations have been adopted.

Moreover, the Company used to buy in the past all its requirements of containers from outside. The production of containers on automatic presses was started only in July 1947, so that at the time of costing no actual cost data for the manufacture of containers were available. In spite of these limitations, the Cost Accounts Officer, with the help of our Technical Adviser and in consultation with the Company's representatives, estimated as closely as possible the cost of production of batteries and containers in the new plant. It may be noted that 75 per cent of the total cost of batteries consists of the cost of the raw materials. The Company maintained that there was no scope for further economy in the quantity of the raw materials used. We have, therefore, taken the quantities of the raw materials from the latest actual figures and we have taken their prices from the latest market quotations. As regards the other items in the cost of production, adjustments are made as follows :—

- (i) The item 'monogram' under raw materials, costing Re. 0.23 per battery, has been disallowed, as this is no longer used.
- (ii) *Power and fuel* : The Company claimed that with the use of automatic machinery, the consumption of power and fuel per unit of production would be larger than for the previous periods. As it was not possible for the firm to say definitely what this increase would be, it accepted the suggestion that the power and fuel cost per unit of output in future might be kept at the same level as in the half year January—June 1947.
- (iii) *Indirect labour, repair and maintenance, consumable stores, establishment and other overheads excepting those mentioned in (iv) below.*—The production of batteries is expected to go up from 9,000 batteries during the six months ended the 30th June 1947 to 45,000 batteries in 1948 and 60,000 batteries in 1949. To cover this great expansion of output, the amount of total expenditure allowed on these items in the future costs is only 25 per cent above the level of expenditure in the half year ended the 30th June 1947. We think that this is reasonable and have allowed this increase.
- (iv) *Other overheads* : (a) *Insurance* : An amount of Rs. 7,000 per annum for insurance has been allowed on the basis of the latest quotation of an insurance company with which the Company has arranged to insure.
- (b) *Library and research* : The Company is starting a separate library and research department. The annual expenditure under this head is estimated to be 10,000 which has been allowed.
- (c) *Advertisement* : The number of completed batteries produced during the 13 months ended the 30th June 1946 was 10,000 and the number produced during the 6 months ended the 30th June 1947, was 9,000. There was not much need for advertisement in the past to find market for this small production. But the Company's production will go up to 45,000 in 1948 and 60,000 in 1949. For this much bigger production, advertisement on an extensive scale will have to be

undertaken. The Company's claim under this item was at first Rs. 1,00,000 but was subsequently reduced to Rs. 70,000. The Board has gone into this question carefully and agrees that, during the first 4 or 5 years, the need for advertisement would be great. But as all the major factories in the country will take about 2 years to start producing batteries to their full rated capacity, the Board feels that an allowance at the rate of Re. 1-0-0 per battery for advertisement should be sufficient during the next 2 or 3 years. This will mean that, on a production of 45,000 batteries in 1948 the Company will be able to spend Rs. 45,000 and on a production of 60,000 batteries in 1949 the expenditure allowed for this item will go up to Rs. 60,000.

- (d) *Depreciation* : This has been allowed in the future cost schedules on the basis of written-down values at income-tax rates.
- (e) *Packing charges* : The actual expenditure during the six months ended the 30th June 1947 in respect of materials and labour for packing was Rs. 2.23 in the case of 6 volt 15 plate battery and Rs. 2.28 in the case of 6 volt 17 plate battery. The same amounts are adopted for future costs also, as the Company does not anticipate any fluctuations.
- (f) *Interest on working capital* : From the balance sheet for the 13 months ended the 30th June 1946, it is found that the capital employed rotates only 0.5 time in a year. On this basis, the working capital has been taken at 6 months' cost of production, and interest thereon at 4 per cent (which works out to 1/50th of the total cost) has been allowed. In this case, the working capital required for producing 45,000 batteries in 1948 will be about Rs. 10,00,000. If production is stepped up in 1949 to 60,000 batteries per annum, the Company may require a larger amount of working capital. But the rotation of capital may change by that time. Therefore, the same amount of working capital, viz., Rs. 10,00,000 has been allowed for 1948 and 1949. It may be mentioned that the interest allowed on working capital comes to 2 per cent on cost when total production is 45,000 batteries and 1.4 per cent on cost when production goes up to 60,000 batteries.
- (g) *Profit on block capital* : The original value of the block is Rs. 3.43 lakhs. Out of this, an amount of Rs. 6.28 lakhs is the value of the block relating to the container department. Therefore, the value of the block relating to the batteries section is Rs. 3.15 lakhs. 10 per cent on the block relating to the batteries section works out to Rs. 31,500, and this amount has been distributed over the total production. It will be noticed that the profit so allowed works out to 1.5 per cent on cost of production if 45,000 batteries are made, and to 1.1 per cent on cost of production if 60,000 batteries are made.

(h) *Containers* : By far the biggest single item of improvement introduced from July 1947 is in the manufacture of containers. To avoid complications in estimating the future cost of batteries, the production of containers has been treated as a separate unit. The Company has given an estimate of Rs. 8/- per container for the purpose of inter-departmental adjustment. This includes profit at 10 per cent on the block relating to the container section. While it provides for only specific additional expenditure necessary for the container section, it does not include other overhead expenditure, which is entirely absorbed by the batteries section. It would, therefore, follow that the price of Rs. 8/- for the container is only meant for inter-departmental adjustment within the factory and is not to be taken as the price at which the Company can sell it to outsiders. It may be mentioned that the price paid by the Company in recent months for buying containers from outside was about Rs. 11/-.

(i) *Freight equalization* : Standard Batteries, Ltd., claimed that, in fixing the fair selling price of indigenous batteries, an allowance should be made for freight equalization on the ground that, for selling its products in markets near and around ports other than Bombay, it has to incur expenses for freight, which the imports at those ports do not bear. We examined this question. Since the industry is not localised in Bombay, but is dispersed in several parts of the country, and since we received no definite data to show the proportion of sales to the output of batteries for different producers in different markets, it was not possible to estimate what amount, if any, should be allowed by way of freight equalization. Consequently, no allowance has been made for this item.

14. Our estimate of the fair selling prices of indigenous batteries is Board's estimate of fair as follows :—
selling prices.

							1948	1949
							Rs.	Rs.
6 Volt 15 Plate	..	..	..	..	..	..	45.77	44.53
6 Volt 17 Plate	..	..	..	..	..	..	50.54	49.14

We shall compare these prices with the c.i.f. prices and landed costs of the corresponding imported batteries for the purpose of determining the measure of protection.

15. Chloride Electrical Storage Co., Calcutta, gave us an estimate of the cost of production of 6 volt 17 plate (3 XCZ 17 type) battery at the Chloride Factory which comes to Rs. 50.04. As the Company requested us to treat as confidential, the details of cost, we are not giving all such details here. The Company's figure of overall cost, i.e. Rs. 50.04 is approximately equal to our estimate of the fair selling price of 6 volt 17 plate Standard batteries

Comparison with the
estimate given by
Chloride Electrical
Storage Company.

in 1948. Our estimate, however, includes an allowance of profit at the rate of Re. 0.79 per battery. If we subtract this from our estimate, then the comparative figures would be Rs. 49.75 for Standard batteries and Rs. 50.04 for Chloride batteries. Though we had no opportunity to examine the cost data for Chloride batteries on the spot by reference to their account books, we discussed the figures with a representative of the firm and feel that the estimate given by the firm may be accepted as reasonably correct. These comparative cost figures indicate that our estimate of fair selling prices of indigenous batteries is, on the whole, fair.

16. (a) In comparing the costs of the Chloride with the Standard batteries, we found that, though the total cost of production in both cases was approximately the same, the cost of raw materials for the Chloride batteries was lower than that of Standards. It is true that the higher expenditure on the raw materials for Standard batteries is compensated by nearly an equal amount of saving on the overheads. Nevertheless, we see no reason why Standards should not be able to effect economy in the use of lead, as is being done by Chlorides with success in the production of batteries of high quality. There is a world shortage of lead, its price is high and it is difficult to procure from abroad. And, there being no indigenous source of supply of lead of the proper quality, we have to meet our requirements from imports. It is, therefore, necessary that the utmost economy should be practised in the use of this basic and scarce raw material. Lead and lead oxides constitute roughly two-thirds of the cost of the raw materials and one-half of the total cost of production of batteries. Economy in the use of lead would, therefore, be a major item of improvement in the manufacture of batteries. We recommend that the Indian manufacturers of motor vehicle batteries should take immediate steps to introduce maximum economy in the use of lead.

(b) Chloride Storage has also furnished us with some interesting figures of comparative labour costs in their Manchester and Calcutta factories. While 22 workers in the assembly section of the Manchester factory turn out 2,000 batteries a day, 30 workers in the corresponding section of the Calcutta factory produce only 300 batteries a day. On this basis, the output per worker in the assembly section at Manchester is about 90 batteries a day, as compared with 10 batteries a day in Calcutta. It is, of course, true that the average remuneration of the worker in Manchester is much higher than that in India. Thus, while the total remuneration received in Manchester by a male worker is Rs. 18-1-4 per day and by a female worker Rs. 11-2-5 per day, the corresponding remuneration for the factory worker in Calcutta is Rs. 3-4-4 per day. The respective numbers of male and female workers in the Manchester factory were not given. Assuming that there are equal numbers of male and female workers in Manchester, the total labour cost for assembling 2,000 batteries there comes to about Rs. 322-0-0. The corresponding labour cost for 2,000 batteries in Calcutta comes to about Rs. 654-0-0. It would thus be seen that, in spite of the wage rate in the Manchester factory being more than four times as high as that in the Calcutta factory, the labour cost for assembling batteries in Manchester is less than half of that in Calcutta. This striking difference in the labour cost of assembling batteries in the two factories is due

to the output per worker in Manchester being 9 times that in Calcutta. We do not see any reason why the average output per worker in the indigenous battery manufacturing industry should not increase appreciably above the present figure, particularly in view of the fact that most of the machinery used in this industry is automatic or semi-automatic and the work done by the ordinary operative is semi-skilled. We recommend that the battery manufacturing industry should make every effort to train up the workers so as to attain a higher output per worker and thus reduce the labour cost per battery.

17. Batteries for motor vehicles are included under item No. 75(1) of the First Schedule to the Indian Tariff Act XXXII of 1934 (as in operation on the 1st January 1948). The relevant extract from the Indian Customs Tariff (28th issue) is given below ; —

Item No.	Name of the article	Nature of duty	Standard rate of duty	Preferential rate if the article is the produce or manufacture of		
				U. K.	A British Colony.	Burma
75(1)	Motor car including taxi cabs and articles (other than rubber tyres and tubes) adapted for use as parts and accessories thereof, provided that such articles as are ordinarily also used for other purposes than parts and accessories of motor vehicles included in this item or in items Nos. 75 (2) and 75 (3) shall be dutiable at the rate of duty specified for such articles.	Preferential rate	45% ad valorem	36% ad valorem	..	24% ad valorem

18. A statement of recent c.i.f. prices of motor vehicle batteries is given in Appendix IV. The most popular and representative types of standard batteries used in the country are 6 volt 15 plate and 6 volt 17 plate batteries. The latest and the lowest c.i.f. prices and landed costs of imports of these batteries, together with the dates and sources of their importation, are given in the following table :—

C.I.F. prices and landed costs of imports.

Latest c.i.f. prices of imported batteries.

6 volt 15 plate.

6 volt 17 plate.

	Ford Motors		Battery Service Ltd.		Mousell & Co.		Battery Service Ltd.	
	Origin of import : U.K.	Date of import : Sept. '47.	Origin of import : U.S.A.	Date of import : July '47.	Origin of import : U.K.	Date of import : latest.	Origin of import : U.S.A.	Date of import : June '47.
	Rs. A. P.		Rs. A. P.		Rs. A. P.		Rs. A. P.	
(a) C.i.f. price	23 13 6	27 0 10	33 5 4		30 1 10	
(b) Customs duty	8 9 4 (36%)	12 2 9 (45%)	12 0 0 (36%)		13 8 10 (45%)	
(c) Clearing charges	0 5	1 8 5	2 4 8		1 6 4	
(d) Landed cost	32 12 0	40 12 0	47 10 0		45 1 0	

19. In paragraph 14 we have given our estimate of fair selling prices of indigenous batteries in 1948 and 1949. It would be seen from the figures given there that there would be very slight reduction of prices in 1949, as compared with those of 1948. But as the protective measure is expected to come into force in 1948 and as there is only a slight difference between the 1948 and 1949 figures of estimated prices, we think it desirable that the fair selling prices in 1948, instead of those in 1949, should be compared with the prices of imports for the purpose of determining the measure of protection. Such a comparison is given in the following table :—

Comparison of landed costs and fair selling price.

protective measure is expected to come into force in 1948 and as there is only a slight difference between the 1948 and 1949 figures of estimated prices, we think it desirable that the fair selling prices in 1948, instead of those in 1949, should be compared with the prices of imports for the purpose of determining the measure of protection. Such a comparison is given in the following table :—

Comparative statement of landed cost and fair selling price.

6 volt 15 plate.

6 volt 17 plate.

	Ford Motors		Battery Service Ltd.		Moussell & Co.		Battery Service Ltd.	
	Origin of import : U.K.	Date of import : Sept. 47	Origin of import : U.S.A.	Date of import : July 47	Origin of import : U.K.	Date of import : latest	Origin of import : U.S.A.	Date of import : June 47
	Rs. A. P.		Rs. A. P.		Rs. A. P.		Rs. A. P.	
(a) C.i.f. price ..	23 13 6		27 0 10		33 5 4		30 1 10	
(b) Customs duty ..	8 9 4		12 2 9		12 0 0		13 8 10	
(c) Clearing charges ..	0 5 2		1 8 5		2 4 8		1 6 4	
(d) Landed cost ..	32 12 0 (36%)		40 12 0 (45%)		47 10 0 (36%)		45 1 0 (45%)	
(e) Landed cost without duty ..	24 2 8		28 9 3		35 10 0		31 8 2	
(f) Fair selling price of indigenous batteries ..	45 12 4		45 12 4		50 8 8		50 8 8	
(g) Difference between fair selling price and landed cost without duty.	21 9 8		17 3 1		14 14 8		19 0 6	
(h) Difference between fair selling price and landed cost without duty as percentage of c.i.f.	90.6		63.2		41.8		63.2	

20. (a) The comparative figures given in the preceding paragraph would indicate a duty of about 90 per cent *ad valorem* on imports of 6 volt 15 plate batteries from the U.K., about 42 per cent *ad valorem* on imports of 6 volt 17 plate batteries from the U.K., about 63 per cent *ad valorem* on imports of 6 volt 15 plate and 6 volt 17 plate batteries from the U.S.A. While in the case of both types of imports from the U.S.A., the same duty, viz., 63 per cent, is indicated, the duties indicated in the case of imports from the U.K. are as far apart as 42 per cent and 90 per cent. Since, at the present time, the main competition comes from the British batteries, we may, first, determine the appropriate rate of duty on British imports. If we take the higher figure of 90 per cent, it becomes too high for 6 volt 17 plate batteries; and if we take the lower figure of 42 per cent, it becomes inadequate for 6 volt 15 plate batteries. This discrepancy is reduced, if we take the average of the two figures, viz., 66 per cent. But there are two factors for which an allowance should be made. Firstly, the importers informed us during the public inquiry that the recent trend of import prices is definitely upwards on account of a rise in the price of raw materials like lead and in the cost of packing. Secondly, there is every possibility that the indigenous manufacturers will be able to effect some economy in the cost of production, particularly in the consumption of lead, in the near future. If we allow 6 per cent for these two factors, the rate of duty would come to 60 per cent. To this, however, we have to add 20 per cent for prejudice against the indigenous batteries. The rate of import duty on imports of batteries from the U.K. would thus come to 80 per cent. We recommend that a protective duty of 80 per cent *ad valorem* should be imposed on the imports of motor vehicle batteries from the U.K. And, as the industry is not likely to be stabilized in less than three years, we recommend that the protective duty should remain in force for a period of three years.

(b) It appears to us that, under the Indo-British Trade Agreement of 1939 and the Indo-Burma Trade Agreement of 1941, (relevant extracts from the texts of the two Agreements given in Appendices V (a) and (b) there should be a preferential margin in favour of imports from the U.K., as compared with the standard rate, and a preferential margin in favour of imports from Burma as compared with both the standard rate and the U.K. preferential rate. The present margins are 9 per cent in favour of imports from the U.K., as compared with the standard rate, and 12 per cent and 21 per cent in favour of imports from Burma, as compared with the British preferential rate and the standard rate respectively. If the present preferential margins in favour of imports from the U.K. and Burma have to be maintained, the rates of import duty should be : standard rate 89 (or, say, 90) per cent, British preferential rate 80 per cent, and Burma preferential rate 68 per cent respectively. It may also be mentioned that, if the modifications proposed in the General Agreement on Tariffs and Trade, Schedule XII-India, are approved and finally adopted, the standard rate should not exceed 86 per cent. (Relevant extract from the text of the Agreement is given in Appendix VI).

(c) We also recommend that the same rates of protective duty should be levied on imports of battery plates, as otherwise plates might be im-

ported at lower rates of duty and then assembled into batteries here, thereby defeating the object of protection.

(d) Judging from the available evidence regarding the trends of prices of lead and other elements of costs in foreign countries, we do not think that the prices of the imports will appreciably fall in the next 3 years. But, should unforeseen circumstances cause a serious fall in the prices of the imports, so as to jeopardise the present measure of protection, the indigenous battery manufacturers may apply to Government to review the case, and, if necessary, to adjust the duty under section 4(1) of the Indian Tariff Act, XXXII of 1934.

21. If our recommendations regarding the levy of protective duties at higher rates are accepted, the Import Tariff Schedule will have to be modified. The present items 75(4), 75(5), 75(6), 75(7), 75(8) should be shifted forward and re-numbered as 75(5), 75(6), 75(7), 75(8) and 75(9) and item 75(1) and item 75(4) (new) should be redrafted as follows :—

Item No.	Name of article.	Nature of duty	Standard rate of duty	Preferential rate of duty if the article is the produce or manufacture of			Duration of protective rate of duty
				The United Kingdom	A British Colony.	Burma	
75(1)	Motor cars including taxi cabs and articles (other than rubber tyres and tubes and batteries) adapted for use as parts and accessories thereof, provided that such articles as are ordinarily also used for other purposes than as parts and accessories of motor vehicles included in this Item or in Items Nos. 75 (2), 75(3) and 75 (4) shall be dutiable at the rate of duty specified for such articles	Preferential Revenue	45% ad val.	36% ad val.	..	24% ad val.	
75 (4) (New)	Batteries for motor vehicles (including those batteries which are interchangeable for automobile purposes on the one hand and Radio, Telephone and Telegraph on the other) and plates for these batteries.	Protective.	90%	80%	..	68%	Three years.

22. Apart from protection by means of import duties, the indigenous manufacturers asked for certain other assistance. We may now examine this question.

(i) *Reduction in the control price of lead and other materials.*— Since distribution control over lead and antimony, the two important

non-ferrous metals required by the battery manufacturers, has recently been lifted, the question of a reduction in the control price of these materials does not arise. The battery manufacturers have now to make their own arrangements for procuring lead and antimony through the normal trade channels or they have to import their requirements themselves, if those are in large quantities. It should, however, be mentioned that grant of import licence for lead and antimony is restricted by monetary limits.

(ii) *Remission of duty on the raw materials and battery component parts.*—The measure of protection we have recommended is based upon our estimate of the fair selling price of indigenous batteries, and in that estimate we have taken the raw materials at their present market prices and thus allowed for the incidence of the present duty. Consequently, remission of duty on the raw materials and battery component parts, though it might be desirable on other grounds, is not called for as a means of adequate protection to the Industry. It may, however, be mentioned that, if the General Agreement on Tariffs and Trade (Geneva, 1947) is ratified, there would be a reduction of the import duty on Douglas fir wood (used for separators) from 30 per cent. to 20 per cent. *ad valorem*.

(iii) *Remission of duty on machinery.*—The Standard Batteries, Ltd., in a letter dated the 12th December 1947, asked that it should be given a refund of Rs. 71,869.2, being the amount which it has already paid as import duty on machinery imported after the date of its original application for protection, i.e., the 27th April, 1946. Since, in determining the measure of protection, we have made full allowance for the actual cost of the machinery, a refund of duty on machinery is not called for as a means of adequate protection. Moreover, as the installed capacity in the country is already sufficient to meet the country's requirements for the next three years, at any rate, there is no special need, in this case, for refunding the duty on machinery for stimulating the expansion of the industry.

(iv) *Ban on the import of batteries fitted as original equipment of motor vehicles.*—The measure of protection we have recommended would, in our opinion, be quite adequate to protect the indigenous industry against all competitive imports; we do not consider that any ban on imports of batteries fitted as original equipment of motor vehicles is necessary, and we do not recommend such a ban.

23. The measure of protection we have recommended would, in our opinion, be adequate to protect the indigenous battery industry against all competitive imports. Consequently, the continuance of the present import control on motor vehicle batteries, though it may be necessary for conserving foreign exchange resources, will not be required as a means of protecting the industry.

24. An idea of the probable incidence of the increase in the prices of motor vehicle batteries on the users of such batteries, on account of the increase in the rate of duty recommended by us, will be obtained from the following comparative figures relating to two representative types viz., 6 volt 15 plate and 6 volt 17 plate batteries :—

Maximum retail selling prices of batteries with existing duties.

6 Volt 15 plate		6 volt 17 plate	
		(i) U.K. Rs. A. P.	(ii) U.S.A. Rs. A. P.
(a) c.i.f.	..	23 13 6	33 5 4
(b) Customs duty	..	8 9 4	12 0 0
(c) Clearing charges	..	0 5 2	2 4 8
(d) Landed cost	..	32 12 0	47 10 0
(e) Maximum retail selling prices	..	65 8 0	95 4 0
<i>Maximum retail selling prices of batteries with proposed duties.</i>			
		(i) U.S.A. Rs. A. P.	(ii) U.S.A. Rs. A. P.
(a) c.i.f.	..	27 0 10	30 1 10
(b) Customs duty	..	12 2 9	13 8 10
(c) Clearing charges	..	1 8 5	1 6 4
(d) Landed cost	..	40 12 0	45 1 0
(e) Maximum retail selling prices	..	81 8 0	90 2 0
<i>Maximum retail selling prices of batteries with proposed duties.</i>			
		(i) U.K. Rs. A. P.	(ii) U.S.A. Rs. A. P.
(a) c.i.f.	..	23 13 6	33 5 4
(b) Customs duty	..	19 1 4	26 10 8
(c) Clearing charges	..	0 5 2	2 4 8
(d) Landed cost	..	43 4 0	62 4 8
(e) Maximum retail selling prices	..	86 8 0	124 9 4
Increase in price	..	21 0 0	27 1 8
Percentage increase in price	..	32%	30%

We were informed that the life of a motor car battery is 18 months and of a motor truck battery 9 months. On this basis the increase in the running cost of a motor car would be about Re. 1 or Rs. 1½ per month and the corresponding increase for the motor truck would be about Rs. 2 or Rs. 3 per month. Considering the present prices of motor cars and motor trucks and the present levels of their running costs, we do not think that this small increase in those costs would impose any excessive burden on the users of motor cars and motor trucks.

25. We, are satisfied that the motor vehicle battery industry in the country is now established and conducted on sound business lines. And we believe that, given the necessary protection and assistance as recommended by us, the industry is likely within a reasonable period of time to develop sufficiently to be able to carry on successfully without protection or State assistance. Besides, batteries being an essential accessory of motor vehicles, we consider that the development of this industry will be in the interest of the nation. The industry is thus eligible for protection.

26. The protection of an industry, whether through import duties or by means of a subsidy, imposes a definite burden on the community which is justified on the ground that the development of the industry stimulates national enterprise, creates new opportunities for the technical training of nationals, and provides profitable employment for national capital and labour. But the community cannot derive these benefits in full measure if the capital, control, and management of important units of a protected industry, are held entirely or largely by non-nationals. In such a case, the protected industry does not become a national industry in the fullest sense of the term. In the battery industry, there are so far two big units of the industry, namely, Chloride Electrical Storage Company (India), Ltd., and General Motors (India), Ltd. (Battery Section), which are entirely foreign-owned and foreign-managed. Chloride Storage has 20 Indians on its lower supervisory staff, but the higher staff is foreign. General Motors proposes to place the technical management of the Battery Section in charge of an Indian. Both firms necessarily employ only Indian workers for the semi-skilled and unskilled jobs. We were also informed that Chloride Storage had under active consideration a proposal to register a company in India with provision for the participation of Indians in capital and management. Both companies also propose to train up Indians for technical jobs. General Motors, however, informed us that it had no proposal to provide for the participation of Indians in its capital and management. During the course of the inquiry, it was disclosed that the present capacity of Chlorides can be expanded from 84,000 to 1,50,000 batteries if it works more shifts. General Motors which is coming into production will have a capacity of 60,000 per shift which can also be raised to 1,20,000 batteries if it works more shifts. These two companies between them can, therefore, manufacture 2,70,000 batteries per year which will exceed the country's demand estimated at 250,000 batteries. In the event of such expansion of their production, the Indian section of the industry will be very adversely affected and the objective of the protective measure will be largely

defeated. The representatives of the indigenous battery manufacturers forcefully pleaded before us that their interests would be seriously prejudiced through the unrestricted operation of foreign capital and enterprise in this industry. Although, for the present, the Indian section of the industry is assured of a market, the risk to which it will be exposed in the event of expansion of production by the foreign companies, is one that cannot be overlooked. In case the two foreign companies expand their production to the serious detriment of the Indian manufacturers, we recommend that Government should adopt necessary measures to safeguard the Indian section of the industry. The lines on which Government should take action can, of course, be determined in consonance with the broad policy adopted by them, regarding the employment of foreign capital and enterprise in this country. We also recommend that Government should enunciate their policy on this vital matter at an early date, as otherwise, the policy of protection to national industries will be undermined.

27. Our conclusions and recommendations are summarised as
Summary of conclusions under :—
and recommendations.

- (i) Although there were a few factories producing motor vehicle batteries on a small scale in the prewar period, the industry expanded considerably during and after the war. Government assisted in the wartime growth of this industry by granting import licences for battery making plant and by securing a steady flow of raw materials required for the manufacture of batteries. Paragraph 4(a).
- (ii) With the exception of lead and suitable wood for separators and certain chemicals, all the other important raw materials are available in the country. Paragraph 5.
- (iii) Asbestos is reported to be available in Mysore and Saraike-la. We recommend that the Council of Scientific and Industrial Research should be asked to take steps to have this material processed for the manufacture of containers. Paragraph 5(b).
- (iv) We recommend that extensive experiments with varieties of wood suitable for separators should be undertaken at the Dehra Dun Forest Research Institute, in collaboration with the principal battery manufacturers in the country. Paragraph 5(c).
- (v) The Annual statement of Sea-borne Trade does not, at present, separately record the value of the motor vehicle batteries imported into India. According to the information furnished by an importing firm, the number of motor vehicle batteries imported into the country in 1937, 1938 and 1939 were 57,317, 50,797, and 53,771 respectively. Import licenses for this article are at present issued subject to an overall monetary ceiling. Paragraph 7.
- (vi) We recommend that the quantity and value of imported motor vehicle batteries should be separately recorded in the Annual statement of Sea-borne Trade. Paragraph 7.

- (vii) The present demand for motor vehicle batteries in the country is estimated to be 250,000 batteries a year. Paragraph 8.
- (viii) The estimated rated capacity of the indigenous battery manufacturing industry is 268,300 batteries for 1948 and 352,300 batteries for 1949. But production to capacity can be attained only on the basis of a steady and adequate supply of raw materials. We recommend that Government should give all facilities for the procurement of raw materials, imported as well as indigenous, by the manufacturers of motor vehicle batteries. Paragraph 9.
- (ix) Given a steady supply of raw materials of the right quality, the Indian manufacturers can turn out batteries as good as the imported article. Paragraph 10(a).
- (x) We recommend that all battery manufacturers in this country should be required to label their batteries as *MADE IN INDIA*. Paragraph 11.
- (xi) We recommend that the battery manufacturing industry should take immediate steps to evolve and adopt, in consultation with the Indian Standards Institution, suitable standard specifications for motor vehicle batteries as well as containers. Paragraph 12.
- (xii) We recommend that the battery manufacturers should take immediate steps to introduce maximum economy in the use of lead. Paragraph 16(a).
- (xiii) We recommend that the battery manufacturers should make every effort to train up the workers, so as to attain a higher output per worker and thus reduce the labour cost per battery. Paragraph 16(b).
- (xiv) We recommend that a protective duty of 80 per cent. *ad valorem* should be imposed on the imports of motor vehicle batteries from the U.K. and that the duty should remain in force for a period of 3 years. Paragraph 20(a).
- (xv) If, under the Indo-British Trade Agreement of 1939 and Indo-Burma Trade Agreement of 1941, the present preferential margins in favour of imports of batteries from the U.K. and Burma have to be maintained, the rates of import duty on this article should be : Standard rate 90 per cent. *ad valorem*, British Preferential rate 80 per cent. *ad valorem* and Burma Preferential - rate 68 per cent. *ad valorem*. Paragraph 20(b).
- (xvi) If the modifications proposed in the general agreement on Tariffs and Trade, Schedule XII-India, are approved and finally adopted, the rates would be 86, 80 and 68 per cent. *ad valorem* respectively. Paragraph 20(b).
- (xvii) We also recommend that the same rate of protective duty should be levied on imports of plates for motor vehicle batteries. Paragraph 20(c).

- (xviii) We do not think that the prices of the imported batteries will appreciably fall in the next 3 years. But should unforeseen circumstances cause a serious fall in the prices of the imports, so as to jeopardise the present measure of protection, the indigenous battery manufacturing industry may apply to Government to review the case, and if necessary, to adjust the duty under section 4(1) of the Indian Tariff Act XXXII of 1934. Paragraph 20(d).
- (xix) If our recommendations regarding the rates of protective duty are accepted, the necessary changes in the Indian Tariff Schedule would be as shown in paragraph 21.
- (xx) The indigenous manufacturers claimed certain other kinds of assistance, which we do not consider to be justifiable. Paragraph 22.
- (xxi) The continuance of the present import control on motor vehicle batteries, though it may be necessary for conserving foreign exchange resources, will not be required as a means of protecting the industry. Paragraph 23.
- (xxii) The grant of protection to this industry will not impose an excessive burden on the users of motor vehicle batteries. Paragraph 24.
- (xxiii) We are satisfied that the industry is eligible for protection. Paragraph 25.
- (xxiv) In case the two foreign companies, namely, Chloride Storage and General Motors, expand their production of batteries to the serious detriment of the Indian manufacturers, we recommend that Government should adopt necessary measures to safeguard the Indian section of the industry. We also recommend that Government should enunciate, at an early date, their policy regarding the employment of foreign capital and enterprise in this country. Paragraph 26.

28. The Board wishes to express its thanks to Dr. P. K. Kapre of the Directorate-General of Industry and Supply (General and Electrical Development), Government of India, Mr. M. Ahmadullah, Secretary to the Board, Dr. Rama Varma, Assistant Secretary to the Board, Mr. P. V. R. Rao, Cost Accounts Officer attached to the Board, Mr. R. N. Kapur, Board's Technical Adviser, and Mr. S. D. Sunawala, formerly Technical Adviser to the Board, for their valuable help and co-operation in connection with the inquiry.

G. L. MEHTA,
President.

H. L. DEY,
Member.

B. V. NARAYANASWAMY NAIDU,
Member.

M. AHMADULLAH,
Secretary.

BOMBAY,
8th March 1948.

APPENDIX I.

List of Firms to whom Board's questionnaire was issued and who submitted their replies.

PRODUCERS :

- *1. Amco Limited, Mehar Building, Chowpatty, Bombay.
- *2. Bharat Battery Manufacturing Co. Ltd., P-1A, Rash Bibari Avenue, Ballygunge, Calcutta.
- *3. Chloride Electrical Storage Co. (India) Ltd., 4, Lyons Range, Calcutta.
- *4. Eastern Accumulator Co., 3, Mangoe Lane, Calcutta.
- †5. Electro Chemical Industries, 9, Jogesh Mitra Road, Bhowanipore, Calcutta.
6. Electrical Storage Co., 112, Narkeldanga Main Road, Calcutta.
- †7. Estrela Batteries Limited, Yusuf Building, Churchgate Street, Bombay.
- †8. Flash Lights (India) Limited, 135, Princess Street, Calcutta.
- †9. General Motors (India) Limited, Sewree, Bombay.
- †10. Himco (India) Limited, Kurla Road, Andheri.
- †11. Heatly & Gresham Limited, 135, Princess Street, Calcutta.
- *12. Indian Battery Manufacturing Co. Ltd., 9-A, Ramdhone Mitra Lane, Calcutta.
- †13. Imperial Battery Co., Madras. (Not regular manufacturers ; but only rebuilders of batteries).
- †14. Josts Engineering Co. Ltd., 19, British India Street, Calcutta.
- †15. Kaycee Industries Ltd., 3 and 4, Chittaranjan Avenue, Calcutta.
- †16. Mojumder Battery Co. (India) Ltd., 3/1 Mohon Bagan Lane, Shambazaar, Calcutta.
17. Mohammad Ali & Brothers, Naya Bazaar, Dhanbad.
18. National Battery Manufacturing Corporation, 27-A, Russa Road, Calcutta.
- †19. National Carbon Co. (India) Ltd., 28, Pollock Street, Calcutta.
20. Oriental Mercantile Co. Ltd., 36-A & B, Pratapaditya Road, Calcutta.
21. Shakti Batteries Ltd., 124/LA., Russa Road, Calcutta.
- *22. Standard Batteries Limited, 43, Forbes St., Fort, Bombay.
- *23. Tropical Accumulators Limited, 32B, Mohim Halder St., Calcutta.
- *24. Utility Trades Corporation Ltd., 59, Forbes St., Bombay (Not regular manufacturers ; but only rebuilders of batteries).

IMPORTERS :

1. Addison and Co., Ltd., Mount Road, Madras.
2. Amco Limited, Mehar Building, Chowpatty, Bombay.
3. Auto Friends, P-74, Bentick St., Calcutta.
- †4. Auto Service Garage, The Mall, Cawnpore.
- *5. Amzel Limited, Opp. Roxy Cinema, Queens Road, Bombay.
6. Bharat Battery Mfg., Co., Ltd., P-1A, Rashbihari Avenue, Calcutta.
7. Burma Oil Co. (Indian Trading) Ltd., Post Box 2039, Chowringhee Square, Victory House, Calcutta.
- *8. Bombay Garage Limited, Post Box No. 566, Bombay.
- *9. Chloride Electrical Storage Co., India Ltd., 4, Lyons Range, Calcutta.
10. Continental Motor House, 9, Ashutosh Mukherji Rd., Calcutta.
- *11. Chimanlal Desai and Co., Homji St., Fort, Bombay.

- *12. Crompton Engineering Co. (Madras) Ltd., 2nd Line Beach, Madras.
- *13. R. K. Dundas (Eastern) Ltd., Laxmi Bldg., Sir P. M. Road, Bombay.
- 14. Das and Bhowmick, 2, Dalhousie Sq., Calcutta.
- †15. Eastern Accumulator Co., 3, Mangoe Lane, Calcutta.
- 16. Flash Lights (India) Ltd., 135, Princess St., Calcutta.
- *17. Ford Motor Co. of India Ltd., Swadeshi Mills Compound, New Queens Rd., Bombay.
- †18. French Motor Car Co., Ltd., 234/3 Lower Circular Road, Calcutta.
- †19. General Trading Co., 9/2, Waterloo St., Calcutta.
- *20. General Motors (India) Ltd., Sewree, Bombay.
- *21. Ganeshdas Ramgopal, Hazratganj, Lucknow.
- †22. Greaves Cotton and Co., Ltd., 1, Forbes St., Bombay.
- †23. Healty and Gresham, 9, Forbes St., Bombay.
- 24. Howrah Motor Accessories Agency Ltd., 3, Mangoe Lane, Calcutta.
- 25. Howrah Motor Co., Ltd., P-6, Mission Row Extension, Calcutta.
- 26. International Traders Ltd., Post Box 362, Karachi.
- †27. Josts Engineering Co., Ltd., 19, British India St., Calcutta.
- 28. Kaycee Industries Limited, 3, Chittaranjan Avenue, Calcutta.
- *29. Lucas Indian Service Ltd., 15, New Queens Rd., Bombay.
- *30. Mousell and Co., Ltd., 9, Mathew Road, Bombay 4.
- 31. National Carbon Co., (India) Ltd., 28, Pollak St., Calcutta.
- 32. F. & C. Osler Limited, Post Bag No. 3616, New Queens Road, Bombay 4.
- *33. Peninsular Motor Corporation Ltd., 19, Convent Rd., Entally, Calcutta.
- †34. Powells Limited, Lamington Rd., Bombay 4.
- †35. Pritchett and Gold and E.P.S. Co., Ltd., 9, Forbes St., Bombay.
- *36. Prestolite Battery Service Ltd., 2-2A, Queens Road, Bombay 4.
- 37. Quazi Nurul Hasan Hamid Husan, New City, Etawah.
- *38. V. S. Rajgopalan and Co., Ltd., Mount Road, Madras.
- 39. G. D. Seigell and Co., 21, Bawa Dinga Singh Bldg., Baddon Rd., The Mall, Lahore.
- 40. S. M. Shafiq and Co., 71, Canning St., Calcutta.
- 41. South Indian Export Co., Ltd., 4, McLean St., Madras.
- 42. Spence Ltd., 23, Convent Road, Calcutta.
- 43. Standard Automobile Co., The Mall, Cawnpore.
- *44. Sridhar and Co., Mount Rd., Madras.
- *45. Society of Motor Mfrs' & Traders Ltd., Post Box 173, New Delhi.
- 46. United Bus Service, Charbaugh, Lucknow.
- †47. United Motors, 3, Abbot Road Lucknow.
- *48. Utility Traders Corporation Ltd., 59, Forbes St., Bombay 1.
- 49. Walford Transport Limited, 71, Park St., Calcutta.

CONSUMERS :

- 1. Allen Berry and Co., Ltd., 62, Hazra Road, Calcutta.
- 2. Amco Limited, Meher Bldg., Chowpatty, Bombay.
- 3. Auto Service Garage, The Mall, Cawnpore.
- 4. Bharat Battery Mfg., Co., Ltd., P-1A, Rashbihari Avenue, Calcutta.
- *5. Bombay Tyre and Rubber Co., Ltd., Radio House, Apollo Bunder, Bombay.

6. Burma Oil Co., (India Trading) Ltd., Post Box 2039, Victory House, Chowringhee Sq., Calcutta.
- *7. M. S. Bhoost and Sons, Gadag.
- *8. Bombay Garage Limited, Band Stand, Chowpatty, Bombay.
9. Central Automobiles, Laxmi Bhawan, Sandhurst Road, Bombay.
- *10. Controller of Telegraph Stores, Alipore, Calcutta.
- *11. Commercial Carrying Co. (Assam) Ltd., 11, Clive Row, Calcutta.
- *12. Chandulal Mehta and Co., Saklat House, New Queens Rd., Bombay.
13. City Motor Service Limited, 36, Whites Road, Madras.
- *14. Dewar's Garage and Eng., Works, 1 Council House St., Calcutta.
- *15. Eastern Agencies, 62, Simla Jubilee, Park Road, Bangalore City.
16. Eastern Accumulator Co., 3, Mangoe Lane, Calcutta.
17. East Indian Railway, Calcutta.
18. Flash Lights (India) Ltd., 135, Princess St., Calcutta.
- *19. Forbes Forbes Campbell and Co., Ltd., Karachi.
- *20. Ford Motor Co., of India Ltd., Swadeshi Mills Compound, New Queens Rd., Bombay.
21. French Motor Car Co., Ltd., 234/2, Lower Circular Rd., Calcutta.
- *22. F. & C. Osler (India) Ltd., Bombay.
- *23. Ganeshdas Ramgopal, Hazratgunj, Lucknow.
- *24. General Electric Co. (India) Ltd., Madras.
- *25. General Motors (India) Ltd., Sewree, Bombay.
26. George Oakes Ltd., Post Box 374, 36, D Mount Road, Madras.
27. Howrah Motor Co., Ltd., P-6, Mission Row Extension, Calcutta.
- *28. Howrah Motor Accessories & Electric Co., 5, Chandmari Road, Calcutta.
- *29. International Traders, P.B. 362, Karachi.
- *30. I.A.A.C. (Madras) Ltd., 20-B, 2nd Line Beach, G. T. Madras.
- *31. Jost's Engineering Co., Ltd., 19 British India St., Calcutta.
- *32. E. R. Joseph and Co., 9, Waterloo St., Calcutta.
33. Kaycee Industries Limited, 3, Chittaranjan Avenue, Calcutta.
34. National Carbon Co. (India) Ltd., 28, Pollack Street, Calcutta.
35. G. Nandy & Co., Ballygunj, Calcutta.
- *36. Pritchett and Gold and EPS Co. Ltd., 9, Forbes Street, Post Box 225, Bombay.
- *37. Powells Limited, Lamington Road, Bombay.
38. Peninsular Motor Corporation Ltd., 19, Convent Road, Entally, Calcutta.
- *39. Pioneer Motor & Electric Co., 227, Upper Circular Road, Calcutta.
- *40. Society of Motor Manufacturers & Traders Ltd., Post Box 173, New Delhi.
41. Standard Automobile and Co., The Mall, Cawnpore.
42. Qazi Nural Hassan Hamid Hassan, New City, Etawah.
- *43. Rane Ltd., New Queens Road, Bombay 4.
44. G. D. Siegfell & Co., 21, Bawa Dinga Singh Bldg., Beadon Road, The Mall, Lahore.
- *45. R. Sen & Co., Elgin Road, Calcutta.
- *46. Simpson and Co. Ltd., Mount Road, Madras.
47. South Indian Bus Transport Ltd., St. Thomas Mount, Madras.
48. Shri Rama Vilas Bus Service Ltd., Cathedral, Madras.

- ‡49. T. V. Sundaram Iyengar & Sons, Ltd., Madura, South India.
- *50. Tata Iron & Steel Co. Ltd., Jamshedpur, B. N. Rly.
- 51. United Motors, 3, Abbot Road, Lucknow.
- 52. United Bus Service, Charbaugh, Lucknow.
- 53. United Motors (India) Ltd., Hughes Road, Bombay.
- *54. Vora Brothers, Fatch Manzil, New Queens Road, Bombay.
- 55. W. Leslie (Motors), 30, Chittaranjan Avenue, Calcutta.

ASSOCIATIONS :

In addition to all recognised Chambers of Commerce and Trade Associations, memoranda were also invited from the following :—

- 1. Automobile Association of Bengal, 40, Chowringhee, Calcutta.
- *2. Indian Road & Transport Development Assn., 27, Bastion Road, Calcutta.
- *3. Indigenous Manufacturers Association, 6, Old Post Office St., Calcutta.
- 4. Southern India Automobile Association, Mount Rd., Madras.
- *5. U. P. Automobile Association, 32, Canning Rd., Allahabad.
- *6. Western India Automobile Association, Lalji Naranji Memorial Building, Churchgate Reclamation, Bombay.

CONTAINER MANUFACTURERS :

- 1. Allied Engineering Co., Ltd., Delhi.
- 2. Firestone Tyre and Rubber Co. of India Ltd., Haybunder Rd., Sewree, Bombay.
- *3. T. Maneklal* Manufacturing Co., 35, Dalal St., Bombay.
- *4. Nanco Rubber Works, Coimbatore.
- *5. National Rubber Manufactures, Ltd., (formerly : A. K. Sarkars Ltd.), Leslie House, 19, Chowringhee, Calcutta.

*Indicates, those who have either replied to our questionnaire or submitted memoranda.

†Indicates, those who have submitted only rated capacity figures (Applies to producers only).

‡Indicates, those who are not interested in the enquiry.

APPENDIX II.

List of persons who attended the public enquiry and were examined.

PRODUCERS :

1. Mr. Habib N. Chinoy	representing	Amco Ltd., Moher Bldg., Chowpatty, Bombay.
2. Mr. S. P. Saha	"	Bharat Battery Mfg. Co., Ltd., P.1-A Rashbihari Avenue, Ballygunge, Calcutta.
3. Mr. Maneklal Choonilal Nanavati, and	}	Estrela Batteries, Ltd., Yusuf Bldg., Churchgate Street, Bombay.
4. Mr. H. N. Doshi		
5. Mr. L. Hansen		
6. Mr. H. Bebbington		
7. Mr. I. H. Cheu	"	Chloride Electrical Storage Co. (India) Ltd., 4, Lyons Range, Calcutta.
8. Mr. R. D. Char, and	}	General Motors (India) Ltd., Sewree, Bombay.
9. Mr. K. G. Parameswarad		
10. Mr. M. Mozumdar	"	Standard Batteries Ltd., Vakola, Santa Cruz, Bombay.
11. Mr. S. K. Mitter, and	}	Tropical Accumulators, Ltd., 32, Mohim Halder Street, Calcutta.
12. Mr. B. N. Banerji		
13. Mr. S. K. Mitter	}	Indian Battery Mfg., Co., Ltd., Ramdhone Mitra Lane, Calcutta.
Mr. S. P. Saha and		
Mr. M. Mozumdar)		
14. Mr. S. K. Mitter	"	Battery Manufacturers' Association, Calcutta.
	"	Indigenous Industries Association, 6, Old Post Office St., Calcutta.

IMPORTERS :

1. Mr. B. C. Suvarna	"	Amzol Ltd, Opp. Roxi Cinema, Queen's Road, Bombay.
2. Mr. A. G. Wozencroft &	}	Lucas Indian Service Ltd., 15, Queen's Road, Bombay.
3. Mr. H. Brown		
4. Mr. F. Wolff	"	Mousell & Co., Ltd., 9, Mathew Road, Bombay.
5. Mr. P. J. Panday	"	Prestolite Battery Service Ltd., 2/2A Queen's Road, Bombay.
6. Mr. A. G. Townsend	"	Oldham & Sons Ltd., Manchester.

CONSUMERS :

1. Mr. Akbar N. Chinoy	"	Bombay Garage Ltd., Band Stand, Chowpatty, Bombay.
2. Mr. C. P. Mehta	"	Chandulal Mehta & Co., Saklat House, New Queen's Road, Bombay.
3. Mr. W. Ross	"	Simpson & Co., Ltd., Mount Road, Madras.
4. Mr. R. H. Trivedi	"	Vora Bros., Fatch Manzil, New Queen's Road, Bombay.
5. Mr. M. G. Kapadia	"	Bombay Motor Merchants' Association.
6. Mr. S. Guevrek	"	Western India Automobile Assn., Lalji, Naranji Memorial Bldg., Churchgate Reclamation, Bombay.

CONTAINER MANUFACTURERS :

1. Dr. Banerjee	"	National Rubber Manufacturers Ltd., (Formerly M/s. A. K. Sarkar Ltd.), 54/10, Chingrighatta Road, Calcutta.
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OFFICIAL :

1. Dr. P. K. Kapre	"	Directorate General Industry & Supply Govt. of India.
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APPENDIX III.

Extract from UTILISATION (New Series), Indian Forest Bulletin No. 124—1944, "INDIAN WOODS FOR BATTERY SEPARATORS" by Messrs. M. A. Rehman, M.Sc., and S. M. Ishaq, M.Sc., Wood Seasoning Section, Forest Research Institute, Dehra Dun :—

SUMMARY.

"The results of a detailed investigation carried out to test the suitability of a few Indian Woods for battery separators, are described in this Bulletin. The Batteries fitted with the separators made of the woods to be tested were subjected to accelerated cycles of charge and discharge. A complete record of the specific gravity of the electrolyte, its temperature, and the voltage of the cells was maintained. The cells were also tested for maintenance of charge on open circuit, internal resistance, discharge at high currents, etc. The cells fitted with *Chamaecyparis lawsoniana* (Port Orford cedar) were used as controls.

The results show that, out of the Indian woods tested *Cupressus torulosa* (cypress), and *Michelia Champaca* (champ) are as good as the imported wood (Port Orford cedar) for battery separators. *Odina cordifolia* (haldu) and *Talauma phellocarpa* are inferior to cypress and champ but the former can be used only in batteries which are not subjected to severe mechanical shocks and in which the expected life is only about one year."



APPENDIX IV.

Statement of recent C.I.F. Prices and Landed Costs of the Imported Motor Vehicle Batteries.

No. of plates	Name of firm.	Description.	Period.	Country of Origin.	C.I.F. Price.	Import Duty.	Clearing & other charges.	Landed Cost.	Selling price.	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
13	Lucas Indian Service, Bombay.	Standard type 6 volt	1947 (June)	U.K.	Rs. A. P. 42 0 0	Rs. A. P. 15 2 0 (36%)	Rs. A. P. 2 8 0	Rs. A. P. 59 10 0	Rs. A. P. 123 0 0	(Retail)
	Ford Motor Co. of India, Bombay.	6 volt	1947 (Sept)	Canada	27 9 0	12 6 5 (45%)	0 5 7	40 5 0	..	
	Chloride Electrical Storage Co., (India) Ltd., Calcutta.	Do.	From June 1947 to date.	U.K.	38 3 0	13 7 0 (36%)	0 10 0	52 4 0	..	Estimated
	*Collector of Customs, Madras.	Walker automobile 6 volts.	10-7-47	U.K.	43 8 0	..	..	..	..	*Source of information.
	Moussell & Co., Ltd., Bombay.	Ajax 6 volt	7-7-47	U.S.A.	47 0 0	..	..	..	..
		Oldham, volt 90 Amp.	Latest**	U.K.	25 5 4	9 2 0	1 11 8	36 3 0	..	**Date of letter 20-11-47.
	*Collector of Customs, Bombay.	18-10657 6 volt Exide 6 LH/13/1	Latest†† Do.	Canada U.K.	26 0 0 64 11 6	.. ..	.. ..	.. ..	.. ..	††Date of letter 27-11-47.
15	Lucas Indian Service, Bombay.	Standard type 6 volt	1947 (June)	U.K.	50 0 0	18 0 0 (36%)	3 0 0	71 0 0	150 0 0	
	Ford Motor Co. of India, Bombay.	6 volt	1947 (Sept)	U.K.	23 13 6	8 9 4 (36%)	0 5 2	32 12 0		
	Battery Service Ltd., Bombay. (Prestolites)	{ Type B1-15 Type L2-90	{ July 1947 Do.	U.S.A. Do.	27 0 10 27 4 8	12 2 9 (45%) 12 4 6 (45%)	1 8 5 1 6 4	40 12 0 41 0 6	81 0 0 82 0 0	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
15	Chloride Electrical Storage Co. (India) Ltd., Calcutta. *Collector of Customs, Madras.	6 volt Walker automobile H 6 volt. Alax 6 volt. Oldham, 6 volt 85 Amp. 3XCZ 15 H Exide.	From June '47 to date. 10-7-47 7-7-47 Latest**	U.K. U.K. U.S.A. U.K. U.K.	44 0 0 46 14 0 48 0 0 29 0 0 28 0 0	15 12 0 (36%) 10 8 0 ..	0 10 0 .. 2 0 0	60 6 0 .. 41 8 0 .. ..	.. .. .. ..	Estimated *Source of information. **Dt. of letter 20-11-47.
17	Lucas Indian Service, Bombay. R. K. Dandas, Bombay. Ford Motor Co. of India, Bombay Battery Service Ltd., Bombay. (Prestolites). Sridhar & Co., Madras.	Cheap type 6 volt. 6 volt Dagenite. 6 volt Type L2-100 TV-51 Low-120 GHF High 135 6 volt. U.S.L. Type No. FM-17 (6 volt) Walker Automobile J-6 volt National R/F-17 Oldham 6 volt 95 Amp. COIAF-10657 6 volt exide 3XCZ 17 H Exide	June '47 Sep. '47. Aug. '47. Jun. '47 1947 1947 June '47 to date Present** 10-7-47 4-9-47 Latest** Latest†† Do.	U.K. U.K. Canada U.S.A. U.S.A. U.S.A. U.K. U.S.A. U.K. Canada U.K. Canada U.K.	45 0 0 37 2 1 32 7 6 30 1 10 42 12 0 46 6 0 47 0 0 38 1 7 50 10 8 38 10 0 33 5 4 29 0 0 41 6 2	16 3 2 (36%) 13 5 10 (36%) 14 9 9 (45%) 13 8 10 (45%) 19 3 10 (45%) 20 13 11 (45%) 17 0 0 (36%) 12 0 0	3 0 10 1 8 1 0 6 9 1 6 4 3 9 5 4 9 4 0 10 0 2 4 3	64 4 0 52 0 0 47 8 0 45 1 0 65 9 3 71 13 3 64 10 0 47 10 0	132 0 0 90 0 0 125 0 0 137 0 0 .. 115 0 0	Figures given by firm for import. Clearing charges. RS. A. P. Rs. A. P. 22 4 1 0 9 2 24 14 1 0 9 2 Estimated **Date of 22-11-47. ††Date of letter 27-11-47.

NOTE.—Figures for c.i.f. price and landed cost are as given by the firms. Import duty has been calculated correct to the pie. Consequential adjustments have been made under landing & clearing charges.

APPENDIX V (a).

Extract from the text of Indo-British Trade Agreement (1939).

ARTICLE 9.

The Government of India undertake, in respect of goods the growth, produce or manufacture of the United Kingdom of the kinds specified in Schedule IV of this Agreement, which comply with the laws and statutory regulations for the time being in force defining Empire goods for the purpose of customs duties, that the difference between the rates of customs duties on such goods on importation into India and the rates upon similar goods the growth, produce or manufacture of any foreign country shall not be less than the margins set out in that schedule.

SCHEDULE IV.

Tariff Item	Article	Margin of pre- ference.
75 (1)	Motor cars including taxicabs and articles (other than rubber tyres and tubes) adapted for use as parts and accessories thereof.	7½%

APPENDIX V (b).

*Extract from the text of Indo-Burma Trade Agreement (1941).*Part I.—*Tariff Treatment of Burmese goods on import into India.*

7. (b) In the case of articles which under the Indian Customs Tariff are at present subject according to origin to either a standard or a preferential rate and those rates exceed 15 per cent and 10 per cent respectively the Government of India undertake to accord a margin of preference of 15 per cent as compared with the standard rate, or 10 per cent as compared with the preferential rate, whichever is greater.

APPENDIX VI.

Extract from Part I of Schedule XII—India, to the General Agreement on Tariffs and Trade, arrived at in Geneva, 1947.

Indian Customs Tariff Item No.	Description of Products	Rate of Duty
75(1)	<p>Motor cars including taxi cabs and articles (other than rubber tyres and tubes) adapted for use as parts and accessories thereof, provided that such articles as are ordinarily also used for other purposes than as parts and accessories of motor vehicles included in this item or in items Nos. 75 (2) and 75 (3) shall be dutiable at the rate of duty specified for such articles.</p> <p><i>Note.</i>—Provided this Agreement does not cease to be in force in the meantime, the products provided for under the above item shall be exempt from ordinary most favoured-nation Customs duties which exceed the preferential rate for such products of United Kingdom origin—</p> <p>(a) by more than 6 per cent <i>ad valorem</i> for the first period of three years from the date on which this Agreement comes into force;</p> <p>(b) by more than 3 per cent <i>ad valorem</i> from the beginning of the fourth year of coming into force of this Agreement ; and</p> <p>(c) by any amount, from the beginning of the seventh year of coming into force of this agreement.</p>	

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